

Original Research Article

Foreign bodies in adult upper digestive tract: a series of 30 cases

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Received: 07 January 2018

Revised: 10 February 2018

Accepted: 14 February 2018

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ABSTRACT

Background: Rigid endoscopy under general anaesthesia has traditionally been used by otolaryngologist for diagnosis and management of variety of disorders affecting the upper digestive tract including the removal of foreign body. Smooth foreign bodies does not pose much threat but may cause airway obstruction. Sharp foreign bodies, if not removed the earliest may penetrate oesophageal wall and cause complications.

Methods: A Retrospective analysis was done for patients who underwent rigid oesophagoscopy under general anaesthesia for 30 patients of foreign body ingestion at Upgraded Institute of Otorhinolaryngology, Madras Medical College, Chennai, between November 2016 – November 2017. The records of age, sex, co-morbidities, X-ray finding, complications were recorded.

Results: Majority of adults in this group belonged to 40-50 years age. The most common foreign body impacted was chicken bone totalling 16. 2 patients of denture ingestion were referred for flexible endoscopy after failed attempt, 1 developed oesophageal perforation.

Conclusions: Rigid endoscopy is the gold standard for removal of sharp foreign body as the sharp ends can be clasped and brought in to the endoscope there by preventing damage to the mucosa. Foreign body with multiple sharp ends which cannot be negotiated into rigid endoscope, should be pushed into the stomach and attempted removal by cutting sharp ends of foreign body or by gastrostomy, as pulling such foreign body will lead to full length tear of oesophagus leading to morbidity and mortality.

Keywords: Rigid endoscopy, Upper digestive tract, Sharp foreign body, Removal

INTRODUCTION

Foreign body ingestion is not only common in children's, but also among adults.¹ Foreign bodies such as bones, dentures, and metallic wires are common in adults. In 70-80% of cases foreign bodies which have gone beyond the oesophagus will pass uneventfully. Radiological localisation is mandatory for decision making for the removal.² Plain digital x-ray plays a pivotal role in the localisation the radio-opaque foreign body. Computerised tomography is reserved for any complications arising of foreign body.

Foreign bodies that are smooth does not pose much threat, but may cause risk of airway obstruction due to its lack of grip, may land in the pathway of airway in glottis or subglottic, or bronchus. Foreign bodies that have sharp edges, should be removed at the earliest. These sharp ends may penetrate oesophageal wall and cause complications by piercing the mediastinal structures or injure these structures while retrieving the foreign body. So aggressive approach is required for sharp foreign bodies such as chicken bone, safety pin, dentures, fish bone.^{3,4}

Rigid endoscopic removal of foreign body is safe and effective but often done under general anaesthesia.⁵ The

sharp end of the foreign body can negotiated in to the lumen of rigid endoscopy thereby aiding it's removal safely without injuring the mucosa.

Rigid endoscopy under general anaesthesia has traditionally been used by otolaryngologist for diagnosis and management of variety of disorders affecting the upper digestive tract including the removal of foreign body. The advent of flexible endoscopes confined rigid endoscopy primarily to foreign body removal, as the flexible endoscopy is done as outpatient procedure to diagnose the disease and in removal of foreign body.

METHODS

A retrospective analysis was done for patients who underwent rigid oesophagoscopy under general anaesthesia for 30 patients of foreign body ingestion at Upgraded Institute of Otorhinolaryngology, Madras Medical College, Chennai between November 2016 - November 2017. All the patients who underwent rigid oesophagoscopy for foreign body ingestion were enrolled for the study. The records of age, sex, co-morbidities, X-ray finding, complications were recorded. The statistical analysis was done for the age group.

RESULTS

14 patients were in the age group of 41-50 years followed by 7 patients in age group of 51-60 years (Table 1). The mean age group was 48.36 years in the 30 patients. Patients with co-morbidities comprised constituted of 8 patients. Most often suffered from diabetes mellitus. X-rays were analysed for signs indicating presence of foreign body (radio-opaque material, increased pre-vertebral space/ soft tissue swelling, abnormal air columns in upper oesophagus. The radio-opaque foreign bodies were 27 in number and 3 radio-lucent were recorded in this study (Table 2, Figure 1A, 2A, 3A). In history of foreign body ingestion with no x-ray finding there were signs of pooling of saliva, congestion of posterior pharyngeal wall mucosa or tenderness over neck.

The most common foreign body impacted in our study was chicken bone totalling 16, followed by 7 denture, 3 mutton bone, one number each of metallic tracheostomy tube, safety pin and tablet cover (Table 3, Figure 1B, 2B, 3B). Out of the 30 patients, 2 patients of denture ingestion were referred for flexible endoscopy after failed attempt to remove it by rigid scopy which slipped into stomach, where 1 developed oesophageal perforation while attempted to remove foreign body by flexible endoscopy which was managed by emergency transhiatal emergency oesophagectomy with pyroloplasty, feeding jejunostomy, bilateral intercoastal drainage recovered from surgery (Figure 4a, 4b). In one patient foreign body was retrieved in stools.

There was history of ingestion of foreign body while alcohol ingestion in 3 patients.

Table 1: Age group.

Age group	Numbers
31-40	4
41-50	14
51-60	7
61-70	5

Table 2: X-ray finding.

Radiolucent	Radio-opaque
3	27

Table 3: Type of foreign body.

Type of Foreign body	Numbers
Chicken bone	16
Denture	7
Mutton bone	3
Tablet cover	1
Tracheostomy tube	1
Pin	1

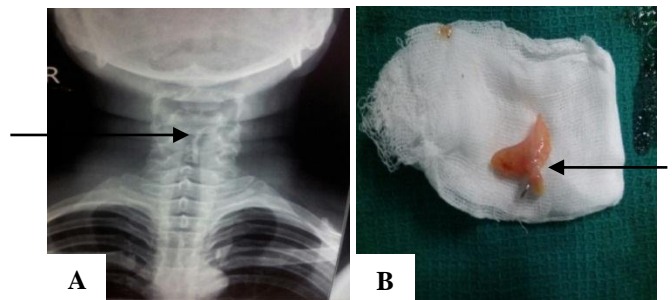


Figure 1: A, B =Denture.

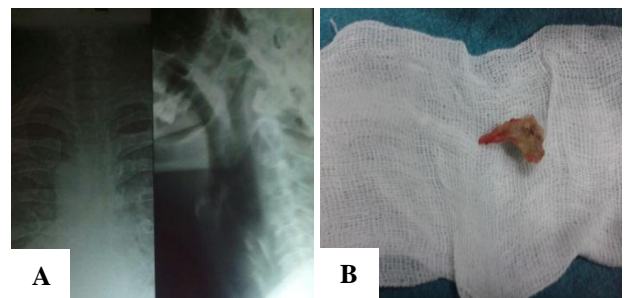


Figure 2 A, B= Mutton bone.

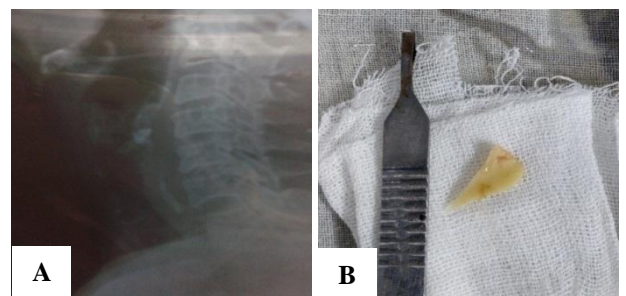


Figure 3 A, B= Chicken bone.

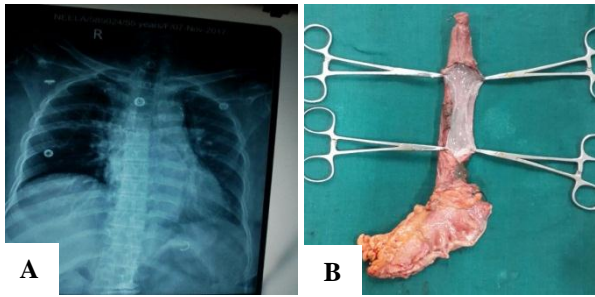


Figure 4: A=Pneumomediastinitis; B= Oesophagectomy specimen.

DISCUSSION

Foreign body impaction in upper digestive tract has been a problem since long. Foreign bodies up to five cm in diameter in length usually pass through whole gut, but if foreign body is large or sharp it may be impacted in oesophagus, in cases of strictures and smooth muscle spasm.⁶ The normal physiological narrowing are post cricoid region, level of aortic arch, left main bronchus and at level of diaphragm, which are the areas of common sites of impaction of foreign body.⁷ Cricopharynx is the most frequent lodgement site described in literature.^{8,9} This is similar to our study. In our study 27 cases had accidental ingestion, while only 3 cases were intoxicated at the time of ingestion of foreign body. The predisposing factors for ingestion and subsequent impaction are dentures causing defective tactile sensation of the palate, while over eating, or a voracious appetite may be contributing factors for ingesting chicken or mutton bones or bolus.^{10,11}

Tissue response to a foreign body varies accordingly to the composition and to associated bacterial over infection. Organic fragments cause greater acute inflammation in comparison to pieces of metal, plastic or bone. The inert nature of plastic materials allows the relatively quick response of patient upon removal of the foreign body, implying a milder tissue inflammation.¹²

Sharp foreign bodies should be removed at the earliest, otherwise it can cause complications. The complications include erosion, perforation, retropharyngeal abscess, and pulmonary.¹³ Prompt endoscopic intervention is the gold standard for foreign body removal. Foreign bodies such as open safety pin, needle, dentures with hooks, sharp blades are dangerous as it can cause laceration of the mucosa and perforation while attempting removal.

Rigid endoscope is preferred to removal of sharp and penetrating foreign body. The sharp ends of the foreign body must be visualised and grasped while retrieval or entire foreign body should be introduced in to the lumen of rigid scope. Such attempt will avoid any risk of lacerating the mucosa. This type of protection is not possible with flexible endoscope but visualising the pointed end and manoeuvring the sharp end is possible.

Dentures with sharp hooks, metallic springs are the most difficult and dangerous object to remove from oesophagus as they cause laceration and perforation during the removal of sharp objects.¹⁴ The removal of such foreign bodies depends on the site of lodgement, if in cricopharynx or at mid level of oesophagus, the foreign body sharp end is to be visualised and grasped to remove. If sharp end is not visualised and at lower end of oesophagus it should be dis-impacted from walls of oesophagus and pushed into stomach as any attempt to blindly pull the sharp foreign body will lead to full length tear of the oesophagus. This can be done using flexible endoscope to manoeuvre the sharp foreign body to stomach.

In 1 to 18% of cases of sharp foreign bodies surgical intervention is required.¹⁵ One denture case in our study while removal by rigid scopy slipped in to stomach. This denture was attempted removal by flexible scopy which resulted in whole length perforation of oesophagus with left pleural effusion and pneumomediastinitis. This case managed by emergency transhiatal oesophagectomy with pyroplasty/ feeding jejunostomy, with bilateral intercostal drainage, put on mechanical ventilation and tracheostomy performed on the patient. The patient was weaned from mechanical ventilation and recovered on 10 post operative day.

CONCLUSION

Sharp foreign bodies in upper digestive tract pose a great challenge to the otolaryngologist. The nature, position, time of ingestion, co-morbid condition should be analysed before making an attempt to remove. Rigid endoscope is the gold standard for removal of sharp foreign body as the sharp ends can be brought in to the lumen of endoscope. But if the sharp ends are not visualised, or at the lower end of oesophagus with multiple sharp hooks, the foreign body must be pushed in to stomach and attempt removal by gastrostomy as blindly pulling such foreign body will lead to full length tear of oesophagus causing morbidity, mortality of the patient.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Jayaraman NK, Vikram VJ, Kalaiselvi M, Sudha M. Foreign bodies in adult upper digestive tract: a series of 30 cases. *Int J Otorhinolaryngol Head Neck Surg* 2018;4:575-8.